



August 15, 1986

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Dear Ken,

Thank you for the opportunity to meet with you and your team to discuss your environment for the MSA purchasing and manufacturing systems and how The Consulting Group might be of service to you. In the time we spent together on July 30, we discussed many potential areas of modification as related by your team members which would be required in order for the system to fully meet the needs of your operating environment. We also discussed other areas relating to the way our Consulting Group works and the life cycle of consulting projects. In our wrap up session we highlighted five areas (from the many items discussed) which you wished for me to respond to with an estimate. These items are as follows:

1. Multiple Buying Entities
2. Requested Stock Material through Purchasing
3. Developing New Screen/Storing New Data
4. Adding New Data Field to Existing Screen/Data Base
5. Increase Data Base Key Field/Screens

The estimates for items 3 - 5 were to sample estimates from which you could do your own extrapolations with the understanding than any given screen/file may in fact be more involved than the estimate is assuming. A summary of these items is attached which indicates the level of understanding under which the estimates were derived.

Based on our discussions, our preliminary estimate is itemized below. The itemization is divided into two areas: functional specifications and development. Attached you will find a brief outline of the things which are considered when developing the functional specs and adaptations. The estimate does not include travel/living expenses for gathering information for specs, required status meetings, etc., if required, or MSA costs for computer time/equipment necessary to complete the project.

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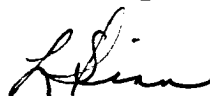
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Once the project has begun and a full requirements definition study has been done, the MSA Consulting Group will be better able to estimate the cost for the Completion of the Functional Specifications and can provide a better estimate for Adaptations. Again, after the Functional Specs have been completed the estimate for Adaptations can be refined. However, all work is provided on a daily time and expenses basis, and no estimates can be binding, as they may be impacted by clarification of needs and changes that develop as we work together on this project.

Again thank you for the opportunity to be of possible service to you.

Sincerely,



Ladd Shinn

LS/lcp

Attachments

ESTIMATE OF COSTS

	<u>Functional Spec</u>		<u>Development</u>		(1)
	Time	Estimate	Time	Estimate	
1.	4 wks	\$10-15,000	9-11 wks	\$25-30,000	
2.	4-6 wks	\$15-20,000	12-14 wks	\$35-40,000	
3. screen/pgm DB/IE	3 day	\$ 2,000	15 day	\$ 9,000	(2)
	2 day	\$ 1,500	5 day	\$ 3,000	
4. screen/pgm DB/IE	-1 day	\$ 500	+1 day	\$ 1,000	(3)
	-1 day	\$ 500	+1 day	\$ 1,000	
5. screen/pgm	1 day	\$ 1,000	(4)-1 day	\$ 500	(5), (3)

(1) Estimates given in full days or weeks. +, - sign to show possible increments.

(2) DB = data base change, IE = Information Expert

(3) See note in attached summary

(4) Must insure than all copybooks and working storage areas are altered.

(5) Estimate for one screen, not necessarily multiple for more programs since copybooks need only be changed once.

## SUMMARY

This summary is not intended to be a full description of the requirement. It is only intended to describe the modification areas discussed.

### 1. MULTIPLE BUYING ENTITIES

The base system interface between manufacturing and purchasing only allows for one buying entity to be identified and used when entering a requisition in the manufacturing system to be passed to purchasing. The CIA requires the ability to specify multiple buying entities on the manufacturing requisition.

The base system interface also limits the buying entity for a requisition entered in purchasing to the single entity specified in manufacturing when the items are to be passed back to manufacturing. Again, the CIA requires the ability to specify multiple entities.

### 2. REQUESTING STOCK MATERIAL THROUGH PURCHASING

CIA would like to control all material/service requests through the purchasing system. Whereas the base system provides for entering a customer order through the manufacturing system and processing that order, the CIA would like to acknowledge the requisition within purchasing and, for "stock" items, pass the information to manufacturing automatically for processing through a "customer" type order. Once the order has been shipped, the system should pass the proper information back to purchasing in order to "close out" the originating PO/requisition.

### 3. DEVELOPING NEW SCREEN/STORING NEW DATA

The CIA has identified data elements they would like to store with their requisitions and purchase orders for documentation and notification purposes. These data elements have no system processing implications and only require simple or no editing. the CIA has not yet quantified the number of screens necessary for capturing modifying and displaying the data. Additionally such data may require expansion of existing data base records or creation of new records. They would therefore like to have an estimate for developing an average screen of data. Such an estimate would provide them with a bench mark from which to extrapolate potential costs once the data and number of screens is determined.

4. ADDING NEW FIELD TO EXISTING SCREEN/DATA BASE

The CIA would also like to add data elements to existing screens. They would therefore like to have an estimate for adding a single field to an existing screen and data base.

Although the estimate given may represent the average cost for adding a new field to a screen and to a data file (which does not require expanding), it should "not" be assumed that two fields would be twice as much. Once in a program/screen/file, it may require little additional time to add a second or third field, etc.

5. INCREASE DATA BASE KEY FIELD/SCREENS

Although a data element may be present in the MSA systems it may need to be expanded in size in order to meet the requirements of the CIA's business. The complexity of such a change increases if the field being expanded is a key to one of the data records. The CIA would like an estimate for increasing the size of a field which is a key.

The estimate given is not as straight forward as it may seem. The cost of such a change depends not only upon the modification to the data base, but it also depends upon the number of screens and reports which use this field and must be altered to reflect the new length. It may be difficult, therefore, for the CIA to extrapolate from an estimate for changing the length for one key data field to another.

## SPECIFICATION STUDY

**OBJECTIVE:** To provide a phased approach for the management of customization requirements to the base MSA Order Processing System. The study will describe and define the project scope, the functional requirements, the approach and the Systems design for the proposed, customer specific, modifications.

### Phase Definitions

#### A. Scoping Phase

##### 1. Project Start-Up

###### . Objectives

- Understand business (needs and environment)
- Determine boundaries/assumptions
- Define technical environment
- Define MSA/Customer responsibilities

##### 2. Functional Requirements

###### . Objectives

- Define the customer requirements which have impacts on the system.
- Describe impacts

###### . Deliverables

- Impact Statements
- Requirements documents of clients needs
- Updated Project Plan

#### B. Exploration Phase

###### . Objectives

- To propose/identify alternative solutions to areas requiring mods as defined in requirements documents.
- Selection solution from alternatives based upon cost and functionality.

###### . Deliverables

- Recommended solutions
- Updated Project Plan
- Initial sizing of the project (refined estimates)

### C. Functional Specification Phase

#### . Objectives

- Develop systems design for modifications
  - a. data base design and changes
  - b. screen and report design and changes
  - c. systems plan
  - d. interfaces
  - e. table usage
  - f. processing
    - . data validation (screen)
    - . file updates
    - . special logic
- Identify affected base system programs

#### . Deliverables

- Systems Design document
- Modification Cost Estimates
- Proposed Project Adaptation Plan

## ADAPTATION

**OBJECTIVE:** To produce upgrades to the base system which, when implemented, will meet the customized specifications detailed in the specification/design study.

### Phase Definitions

#### A. Programming Specs Phase

- . Objective(s)
  - To provide detail specifications for programming
- . Deliverables
  - Description of modified program logic (eg. flow diagram/work flow)
  - Definitions of where logic fits in program
  - Constraints (if any) it may impose
  - Document change requests and/or agreements

#### B. Development Phase

- . Objective(s)
  - To produce application outcome defined in functional specs.
- . Deliverables
  - Modifications to be added to base system
    - a. Coded and Unit/Systems tested
  - Completed systems documentation (for mods)
  - Any revised operations documentation

#### C. Systems Testing Phase

- . Objective(s)
  - To test entire systems ability to meet functional specification
- . Deliverables
  - Tested system